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be discovered, and eight stars of magnitude 11.5 to 13.5 were used for comparison purposes. The result for the relative parallax is

$$\pi_{\text{rel.}} = 0''.000 \pm 0''.010$$

The only other condensation in the nebula which is visible on all the plates is the bright nebulous patch to the north of the center; the images of this point are, however, too asymmetric and too diffuse to afford accurate measurement.

A. VAN MAANEN,

#### A DISTANT STAR IN HIGH GALACTIC LATITUDE.

The possibility of finding the limit of the galactic system thru the investigation of very faint variable stars was noted some years ago in a paper by Russell and Shapley (*Ap. J.*, 40, 417, 1914). The discussion did not include cluster-type variables, and their distribution in space was not investigated; but the recent work at Mount Wilson on variables in globular clusters shows that these stars have an extremely definite intrinsic brightness, and accordingly they are probably a much better gauge of distance than longer period Cepheids and eclipsing binaries. Furthermore, in clusters the short-period variables appear to be more widely distributed than the other stars of equal or greater luminosity, the apparent area of some systems, when the outlying variables are taken into account, being more than double the area estimated on the basis of the ordinary cluster stars. If the analogy holds in the general galactic system, our faintest cluster-type variables would enclose a volume that contains practically all stars of all absolute magnitudes; and at any rate, their distances give a lower limit to the dimensions of the region that is occupied by isolated members of the galactic system.

The variable RU *Boötis* was discovered at Paris in 1908 by Jules Baillaud on plates made for the Carte du Ciel (*Comptes Rendus*, 147, 230, 1908). His study of the star yielded a period of 11<sup>h</sup> 50<sup>m</sup> and a light curve typical of the short-period Cepheids (*Bull. Ast.*, 26, 401, 1909). In its faintness the variable is out of the ordinary, and also in its high galactic latitude (+63°), which is exceeded by only one Cepheid variable of known period. These two features indicate a peculiarly great distance from the plane of the Galaxy, if the star's luminosity can be accepted as normal.

Photographs of the variable and its comparison stars have been

made with the 60-inch reflector with the object of checking the magnitude scale, of obtaining values referred to the Mount Wilson system, and of determining colors. The final results for the comparison stars are in good agreement with the provisional photographic values adopted by Baillaud:

Star	a	b	c	d	e
Baillaud's Mag.	12.5	13.2	13.5	14.0	14.5
Mt. W. Pg. Mag.	12.27:	13.43	13.75	14.01	14.75
Color Index	1.23:	0.36	0.33	0.59	1.06:

Transforming the published light curve to the Mount Wilson scale, we find the median magnitude (photographic) is 13.70.

The data obtained from the Mount Wilson plates relative to the color of the variable are as follows:

1917, Mar. 27 (near maximum), Pg. mag. = 13.25, Pv. mag. = 13.26,  
 Color index = -0.01  
 1917, May 27 (near minimum), Pg. mag. = 14.29, Pv. mag. = 13.9,  
 Color index = +0.4

The color and its variation are perfectly normal for a cluster-type variable. The length of the period, the range of variation, and the shape of the light curve are also exactly typical of these variables. There is no reason to believe, therefore, that its intrinsic brightness differs from the hundreds of others in globular clusters and in the galactic system. As the nearest globular cluster is about  $20^\circ$  distant, this variable can not be an outlying member. It seems very probable that it is indeed a member of our galactic system, with a parallax between  $0''.0002$  and  $0''.0003$ . This is of the same order of distance as some parts of the galactic clouds (*Proc. N. A. S.*, 3, 267, 1917) and possibly of many other faint stars in the Milky Way, but the outstanding peculiarity of RU *Boötis* is its position not far from the north pole of the Galaxy. The distance from the galactic plane, with the above limits of the parallax, is between 10,000 and 14,000 light-years, whereas the greatest distance found heretofore is of the order of 2,000 light-years, estimated by McDiarmid and others for some eclipsing binaries.

The distance of SW *Herculis* from the galactic plane must be a little more than half as great as that of RU *Boötis*, but the other faint cluster type variables are in or near the Milky Way.

HARLOW SHAPLEY.